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Advanced Critical Care Practitioners – Practical experience of implementing the ACCP Faculty of Intensive Care Medicine Curriculum in a London Critical Care Unit

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Abstract

With a chronic shortage of doctors in intensive care, alternative roles are being explored. One of these is the role of the Advanced Critical Care Practitioner (ACCP). The ACCP Curriculum was developed by the Faculty of Intensive Care Medicine and is used to provide a structured programme of training. The ACCP programme consists of an academic and clinical component. This paper outlines a practical approach of how the programme was developed and is currently being delivered at a single institution. This new advanced practice role offers opportunities to fill gaps in the medical workforce, improve continuity of patient care, provide mentoring and training for less experienced staff as well as offering a rewarding clinical role.

Background to ACCP programme

In the UK, advanced nursing practice has developed over the past forty years. With a chronic shortage of doctors, a growing ageing population and greater numbers of patients with complex long-term conditions; advanced practitioner roles have grown in many settings including emergency, primary and secondary care. [1-5] Although advanced critical care nurse practitioners (ACCNPs) have been established in the US since the early 1990s, this role has not developed to the same extent in the UK.[6] Also, whereas the critical care outreach nurse has been a well-established role throughout the UK, there was no national consensus on the ACCNP role. To address this, in 2015, the Faculty of Intensive Care Medicine developed a curriculum for Training for Advanced Critical Care Practitioners that was applicable to both nurses and other allied health professionals. [7] Unlike other countries such as the US and Australia, nurse practitioners (NP) are not protected titles in the UK and there has been a lack of consensus on the definition of an advanced practitioner (AP) or NP. The curriculum was developed for a Postgraduate Diploma/Masters level qualification in Advanced Critical Care Practice (ACCP). Its development was informed by, and aligned to, the National Education and Competence Framework for Advanced Critical Care Practitioners (Department of

Health, March 2008) and the Advanced Practice Toolkit for Scotland (Scottish Government, June 2008). [8,9]

The curriculum builds on various frameworks including Skills for Health that attempts to benchmark practice and support a structured career ladder.[10, 11] Health Education England has recently released a definition for advanced practice: [12]

'Advanced Clinical Practice is delivered by experienced registered healthcare practitioners. It is a level of practice characterised by a high level of autonomy and complex decision-making. This is underpinned by a Masters level award or equivalent that encompasses the pillars of clinical practice, management and leadership, education and research, with demonstration of core and area specific clinical competence.' [12]

ACCPs work in established healthcare roles as nurses or Allied Health Professions such as physiotherapists. The scope of practice in ICU revolves around delivering care to those who are acutely ill. The ACCP role requires an in-depth knowledge of intensive care medicine (especially in pathophysiology and prescribing) and a number of specialist skills including resuscitation, advanced physiological monitoring and provision of advanced organ support. ACCPs need to work in managing critically ill patients, supporting the family, collaborating with the ICU team and co-ordinating specialist and multi-specialty care. Given this extensive scope and breadth of practice, ACCPs need a curriculum that encompasses all of these competencies as has been developed by the UK's Faculty of Intensive Care Medicine (FICM) curriculum for ACCPs.

Given this new role and the publication of a specific curriculum by FICM, the aim of this paper is to discuss the experience of implementing this new ACCP role at a central London critical care unit that specialises in cancer care.

Rationale for introducing the role

In 2016, the Royal Marsden Hospital, approached Kings College London University with the aim of working collaboratively on appointing and supporting two ACCPs through the 2-year training programme. The rationale for setting up the ACCP programme was to develop a skilled practitioner role which would aid multidisciplinary team working, facilitate continuity of patient care and provide support for gaps in the junior doctors' critical care rota. Anticipated benefits include enhancement of junior doctors training experience by allowing them to focus on training opportunities during their rotation. In addition, the ACCP programme provides a robust developmental pathway for senior nurses who wish to advance within a clinical nursing role, supporting recruitment and retention of skilled staff. A business case was put forward to the Trust demonstrating the potential advantages of

this new role and the posts were financed through longstanding vacant junior doctors and nursing posts. The posts were presented to the Trust's Integrated Governance and Risk Management Committee (IGRM) to ensure that the Trust was satisfied with their scope of practice from a clinical governance perspective. The candidates were also strongly encouraged to take up personal indemnity at the start of their training programme.

The hospital developed a job description for the trainee ACCPs outlining their roles and responsibilities that included initial assessment, management and care of level 1-3 patients, and scope of practice. The roles and responsibilities were categorised using the following headings: Clinical, Academic, Educational, Management and Leadership, Service development and Research/Audit. The roles and responsibilities are made explicit and so the scope of practice is clearly defined. The Table below outlines the clinical duties and responsibilities for the trainee ACCPs (**Table 1**). The ACCPs have an allocated Educational Supervisor, with dedicated time in their job plans to support this role and an Academic Supervisor who is based at the affiliated university (as per FICM requirements).

Table 1: Principal clinical duties and responsibilities for trainee ACCPs:

- To work competently in the role of ACCP, being aware of the boundaries of the role, referring patients appropriately to other healthcare professionals as required.
- To perform advanced physiological assessment of critically ill patients regardless of location (Critical Care Unit/Theatres/Recovery/Wards)
- To analyse and/or collect information from the physiological assessment, patient history, diagnostic data and identify relevant problems.
- Use appropriate clinical decision making to initiate appropriate management/treatment according to agreed protocols and guidelines.
- Prescribe and administer drugs, including those specific to the critically unwell cancer patient, as a Non-medical prescriber.
- To undertake supervised basic airway management skills.
- Initiation and subsequent management of mechanical ventilation, which will include monitoring blood gases and altering ventilator settings to ensure optimal ventilation.
- To assist with inter and intra hospital transfer of the critically ill patient according to locally agreed protocols.
- To undertake and organise the management of patients with tracheostomy in the Intensive Care Unit and ward areas, including initiating and managing tube changes and decannulation.
- Initiate admission to and discharge from the Intensive Care, Recovery and Step Up after consultation with the consultant in charge of the unit. This would include admission clerking and discharge summaries.
- To insert peripheral and central venous access devices, including PICC devices on satisfactory completion of competencies.
- Arterial puncture and cannulation on satisfactory completion of competencies.
- To adhere to the Trust and CCU guidelines.
- To work flexibly as a member of the Critical Care Team supporting the medical and nursing teams.
- Recognise and take appropriate actions with regard to critical incidents using appropriate pathways.
- To interpret and utilise complex data obtained from effective use of current invasive and non-invasive monitoring equipment initiating appropriate management.
- Request initial laboratory and radiological tests as required.
- Request and prescribe blood products as required.
- Interpretation of laboratory and radiological results initiating appropriate management.
- Communicate highly complex and sensitive information to patients and relatives.
- Present at CCU MDT and handover.
- To provide accurate and effective clinical handovers.
- To manage a caseload of discharged patients and assist weekly with the CCU Follow-Up Clinic

Preparation of ACCP programme: Curriculum, assessment and supervision

ACCP curriculum

The FICM curriculum document has three parts: Part I, a handbook with an overview of competency-based training in ACCP; Part II, the Assessment System provides the outcome paperwork for ACCP trainees to demonstrate their development as they progress through the ACCP training programme and Part III, the Syllabus, which details the ACCP Competencies including core science, common competencies derived from the Academy Common Competency Framework and specialist competencies taken from the National Education and Competency Framework document along with relevant assessment tools. [8] The ACCP trainees were required to collate a portfolio demonstrating all these components that could be accessed and discussed by the clinical supervisors/consultants and Higher Education Institution (HEI) academics at the regular three-monthly meetings. The aims of the ACCP competency framework are clearly articulated in the FICM document (**Table 2**).

Table 2: ACCP competency framework aims

• Enable ACCP training to a nationally agreed standard.
• To describe the theoretical knowledge, practical skills and professional judgment required of an ACCP.
• Facilitate incremental development and demonstration of competence to practice as an ACCP.
• Promote the necessary attitudes and behaviours required to care for patients as part of a multidisciplinary team.

Teaching

Local teaching within the hospital is overseen by a Local ACCP Clinical Lead, an Intensive Care Consultant who holds an honorary appointment with the HEI and is responsible to the HEI for the delivery of the clinical components of local teaching programme. Each of the ACCP trainees have an allocated Educational Supervisor who assists in monitoring and defining the trainee's educational requirements throughout their training, Clinical Supervisors who are responsible for monitoring and guiding their progress in each clinical area and an Academic Supervisor to ensure the academic component of the programme is being fulfilled. The academic component is undertaken with the affiliated university with academic modules covered in Year 1: Evidence Based Decision Making in Healthcare, Measurement and Evaluation in Healthcare Practice, Advanced Assessment skills and in Year 2: Non-medical Prescribing to give a total of 135 credits over the 2 years (**Table 3**).

Table 3: HEI accredited postgraduate diploma (PG Dip) modules

HEI accredited PG Dip modules	
Module	**Credits**
Core: Evidence Based Decision Making	30
Core: Measurement and Evaluation for Health Care Practice	15
Advanced Assessment Skills for Non-Medical Practitioners	30
Non-Medical prescribing	60
Total	**135**

Clinical supervision and course delivery

The trainee ACCP job description outlined the framework of the local course delivery, expected academic requirements of the programme and clinical roles and responsibilities of the ACCPs during training (**Table 4**).

Table 4: Clinical and academic training programme

ACCP training programme		
	Clinical	Academic HEI based
Content created and delivered by subject experts		
Year 1	Work based clinical practice and assessment (critical care ward rounds, ward work, practical procedures, theatre, critical care follow up clinic, MDT presentation). Teaching sessions, internal and external courses, journal club, audit, service improvement projects	PG Dip modules: Evidence-Based Decision making in Healthcare Measurement and Evaluation for Healthcare Practice Advanced Assessment Skills for Non-Medical Practitioners
Year 2	Supervised clinical practice and assessment (ward rounds, ward work, practical procedures, theatre, critical care follow up clinic, MDT presentation). Teaching sessions, internal and external courses, journal club, audit, service improvement projects. Rotational posts to gain experience in specialist ICUs.	PG Dip modules: Non-medical prescribing
Successful completion of ACCP programme + portfolio assessment + registration with FICM ACCP programme + successful interview		
Substantive ACCP		

The decision was taken that the first 8 months of training would be supernumerary during day time weekdays, the second 8 months would involve work and supervised training during day time weekdays but may include training outside these hours (evenings and weekends) and the third 8 months will include work and supervised supernumerary training on a rota in line with the junior medical critical care rota.

At the end of 2 years, ACCP trainees who have satisfactorily completed ACCP FICM competency training programme, completed their PG Dip or MSc and are accepted as Associate Members of the FICM will be invited to interview for the substantive ACCP role. At this point, they will no longer be supernumerary and be integrated into the junior medical doctors' rota.

Assessment

As well as the formal academic assignments and examinations as part of their HEI PG Dip or MSc, trainees are required to demonstrate that they have completed all the competencies of the ACCP FICM curriculum. Many of these have components common to doctors in training in Intensive Care Medicine and critical care nurses. For those competencies unable to be covered in the primary critical care unit, the ACCP trainees are allocated for rotational blocks of periods out of the primary unit. This includes spending time in specialist centres such as cardiothoracic intensive care, trauma units, and neuro-critical care units.

The ACCP trainees maintain their training portfolio throughout the programme. This includes workplace-based assessments (WPBAs) that are integrated throughout the programme and allow the trainees to be given detailed and constructive feedback to improve their practice as well as allow review of their cognitive, psychomotor and behavioural learning outcomes. These WPBAs are mapped against the competences (based on the requirements of the GMC's Good Medical Practice); [13] WPBAs used include the ICM mini clinical evaluation exercise [I-CEX], directly observed procedural skills [DOPS], case-based discussion [CBD] and acute care clinical assessment tool [ACAT] Trainees are required to document each of these in detail as part of their portfolio. A minimum number of WPBAs is specified by FICM. The actual number of observations of work required are reviewed and adjusted according to the ACCP trainee's progress and set objectives during their quarterly review. In addition, the programme stipulates that the ACCP trainees have to gain at least a 50% pass in all the components of the end of year formative assessment (OSCEs, Case presentations), attend at least 80% of the formal teaching sessions, pass all the relevant University modules and pass all the external courses (Advanced Trauma and Life Support Course, Basic Assessment and Support in Intensive Care etc).

Students maintain a portfolio (known as the ARCP in FICM documentation) and this consists of the documentary evidence submitted by the ACCP trainee. The portfolio includes, as a minimum, a review of the ACCP trainee's Training Record and portfolio and a structured report from the educational or clinical supervisors. For the progression of students, we provide formal quarterly

assessments of the trainees in the workplace with educational, clinical and HEI academic supervisors present.

Implementation of ACCP programme

Prospective ACCP candidates underwent a structured interview after shortlisting. Interviews were held in April 2016 with five candidates short-listed and the interview panel consisted of the ACCP Local Clinical Lead, a second Intensive Care Consultant, the Nurse Manager and the HEI Academic Lead and a representative from Human Resources. The calibre of candidates was excellent and two trainees were appointed. The trainee ACCPs programme commenced in June 2016 and the two ACCPs registered with FICM and enrolled in the HEI MSc. Both trainees are nurses: one trainee was an internal candidate and the second candidate had been working as a senior nurse in another London intensive care unit. As part of their appointment and as mandated by FICM, both trainees arranged their own professional indemnity cover.

At the first meeting with their respective educational and academic supervisors, an ACCP educational agreement was devised for each ACCP trainee. The agreement included clinical management objectives such as clinical assessment of acutely ill patients and undertaking micro ward rounds, expected number of practical procedures that should be undertaken (i.e. venepuncture, arterial line insertion and central line insertion), expected self-study modules to be completed, expected academic modules to be completed, expected courses and teaching sessions to be attended. Trainees also identified an audit that they could undertake and details of planned teaching and study days.

Both ACCP trainees have produced appropriate educational agreements and worked with their nominated Consultants presenting cases on a weekly basis and setting specific learning objectives to be achieved for the next meeting. Quarterly meetings were held to assess progress in October 2016 and January 2017.

In June 2017, the ACCP trainees' Annual Review of Competency Progression (ARCP) was undertaken with both trainees progressing and meeting all the requirements. The review was undertaken by the ACCP Local Clinical Lead, educational and academic supervisors and Nurse Manager. The academic supervisor completed the HEI End of Attachment Assessment and the educational supervisor completed the Educational Supervisor's Report.

Overall from a clinical and educational perspective, both trainees were able to be provide a comprehensive portfolio documenting all their study days, courses attended, self-study modules completed, teaching days attended, practical procedures undertaken, WBAT and evidence of FICM

curriculum competencies achieved. In a formal ARCP meeting with the academic and educational supervisors, ACCP Local Clinical Lead and Nurse Manager we all agreed that the trainees were progressing at a satisfactory rate and had achieved their educational objectives and overall competencies. This included specific competencies relating to their specialist clinical roles and included knowledge such as infection diagnosis and management, haematology as it relates to critical care, mechanisms of drug action and practical skills such as venepuncture, central line insertion, and urinary catheterisation.

In terms of the WPBAs used-ICM Mini-CEX [I-CEX], Directly Observed Procedural Skills [DOPS], Case-based Discussion [CBD] and Acute Care Clinical Assessment Tool [ACAT], trainees completed the minimum requirement for the year: DOPS (8), ACAT (4), CBD (2) I-CEX (2), a 2,000-word expanded case summary and logbook summary demonstrating activities, patient involvement, practical procedures and critical incidents. **Table 5** outlines both trainees' activities for year 1 with teaching sessions as well.

Table 5: Work Place Based Assessments of ACCP trainees completed by end of Year 1

Assessment	**Minimum Number**	**ACCP 1**	**ACCP 2**
Direct Observation of Procedural Skills [DOPS]	8	25	10
Acute Care Assessment Tool [ACAT]	4	4	4
Case-based Discussion [CBD]	2	15	13
ICM Mini-Clinical Evaluation Exercise [I-CEX]	2	3	3
Multi-Source Feedback [MSF] (including self-assessment exercise within specified domains)	1	10	8
Expanded Case Summary (to standard of case presentation in departmental meeting)	1	2	1
Logbook Summary – demonstrating activities, patient involvement, practical procedures and critical incidents.	1	1	1
Records of reflective practice	2	2	3
Summary of all formal teaching sessions and courses attended	1	1	1

With the ACCP trainees' university modules, both have successfully completed their modules for the academic year 2016/17. One trainee has completed all the diploma modules and is ready to start the dissertation and the second trainee has undertaken 60 credits to date. Collaborate quarterly

meetings will be maintained for year 2 with the aim that both trainees will have completed academic and clinical requirements.

Feedback and learning to date

The ACCP programme requires buy-in from both nursing and medical staff for successful implementation. This requires key stakeholders at a unit and Trust level to understand the need for the programme and support the programme. Prior to the start of the programme, there was a consultation involving the medical team, senior nursing team and Trust management. This required presentations at to the Trust Medical Advisory Committees, Trust Nursing and Allied Health Professional committee, Trust IGRM and CCU Multidisciplinary team meeting to gain understanding and acceptance of the programme. We were conscious that we did not want to impact on junior medical doctors training and also received feedback from them. Key advantages and challenges of the ACCP programme are highlighted in **Table 6**.

Table 6: Key potential advantages and challenges of implementing the ACCP programme

Potential advantages	**Potential challenges**
Better patient continuity	Lack of buy in from key stakeholders
Improved adherence to local guidelines and protocols and thus possibly improved patient safety	Confusion and lack of understanding around ACCP role
Better multidisciplinary team working	Indemnity and accountability
Better patient experience	Costs of ACCP training programme
Better training experience for junior medical staff (allowing them to be easily released for training days/teaching and focus on educational opportunities rather than clinical duties)	ACCP retention once training is completed
Fulfils gaps in junior doctors staffing	Time and workload for ACCP trainers
Reduction in agency doctor use with potential cost savings and better continuity of patient care	Clarity around scope of practice (e.g. intubation, transfers etc)
Fulfils gaps in medical rota during junior medical changeover days	Loss of senior nursing staff to advanced roles
Career progression for Senior Nursing staff and Allied Health Professionals	Patient confusion around role
Role model and staff training in the unit	Perceived threat to junior doctor training
Permanent substantive staff	Increased supervision and workload required from Consultants

The process of initiating and implementing an ACCP trainee programme is labour intensive and is not inexpensive. Setting up the programme required significant input from the local ACCP Lead Clinician, fellow ICU consultants who can act as educational and clinical supervisors, the Nurse Manager, an appropriate HEI academic supervisor and, most importantly, buy-in from key stakeholders. Regular weekly meetings between the Consultant and the ACCP trainee ensured there was continuity and allowed regular feedback and setting specific SMART objectives. The success of the ACCP implementation is due to a strong partnership between the trainees, clinicians and HEI academic provider alongside support and engagement of the unit. From November 2017, all trainee ACCPs must be undertaking an accredited pathway in order to obtain FICM membership.

The costs of training programme need to be carefully evaluated. As the ACCPs remain supernumerary for the 8 months of the programme, and therefore are not included in the nursing and medical work force numbers but after that time, the ACCPs fill gaps in the rota. At our institution, we chose to train the ACCPs at a Band 7 - reflective of their base line experience and expected responsibilities within the training process and in line with the Agenda for change. The MSc/ PG Dip and additional external courses, deemed essential, are funded by the nursing study leave budget.

On completion of the programme in the UK, the cost of an ACCP at band 7 or 8a level may be £30,000 -£45,000, the equivalent and in some cases more than a junior doctor (Foundation Year 2 doctor, Specialty Registrar CT1) salary, therefore the concept that ACCPs are an inexpensive workforce solution is misleading. However, compared to use of regular locum medical doctors they may offer a number of other useful advantages as outlined in Table 6.

General Discussion

The model of ACCNPs has been previously reported in US oncology critical care units. D'Agostino et al. faced challenges with recruitment, training, collaborating and communicating but experience at our institution has been positive. [14] This was probably due to early and enthusiastic buy-in from key stakeholders, a comprehensive job description outlining all aspects of the role and expectations, the ability to use the structured FICM ACCP curriculum and the close working relationship between each trainee and their nominated educational supervisor. The ACCP trainees were also able to work on developing their knowledge and skills in a variety of settings outside the critical care unit including outpatients (for supervised history taking and examination), theatres (basic airway management, central lines, arterial lines), emergency department, the medical assessment unit (venepuncture,

PiCC line insertion, cannulation) and part of the programme involved rotation to other specialised units (cardiothoracic intensive care, neurointensive care, trauma centres and burns units).

The impact of ACCPs in critical care have been evaluated in a few published studies. [15,16] The positive benefits of the ACCPs in critical care have been observed in a prospective cohort study of 9,066 admissions with the primary end-point of 90-day survival and secondary end-points of ICU and hospital length of stay. [15] The authors reported no difference in 90-day survival (6.3% vs. 11.6%, adjusted odds ratio 0.77; 95% CI: 0.63-0.94, p=0.01), hospital mortality or ICU length of stay with the use of ACCPs. Another published study supported the use of Nurse Practitioner and Physician's Assistants. [16] In this study, the authors evaluated 21 ICUs and demonstrated similar risk-adjusted mortality between the 2 groups (adjusted relative risk, 1.10; 95% CI, 0.92-1.31). More studies are required to determine the true impact of the use of ACCPs in critical care.

More recently, an editorial by Lilly and Katz advocated ACCP as part of the ICU staffing following 2 published studies. [17] Their key message was: '*The accumulated evidence suggests that properly trained and supervised non-physician prescribing providers can provide high-quality critical care.*' However, the authors also drew attention to the need for structured training with adequate senior supervision. Of note in the studies, ACCPs and residents showed no difference in mortality rates and this suggests the role is beneficial. [16, 17]

Assessments provide opportunities for ACCP trainees to demonstrate excellence in their field as outlined. The WPBAs are comprehensive and clearly demonstrate requirements as per the GMC Good Medical Practice. [13] Given that ACCPs are a relatively new concept, it is important that the training record of trainee ACCPs is comprehensively documented for medico-legal reasons. The trainee ACCPs at our institution were able to produce their portfolios demonstrating development of all the required areas. Currently these are in a paper format and hopefully an e-portfolio will be introduced to allow easier record keeping. Importantly the WPBAs demonstrate the integration of theory to practice and the application of knowledge and skills. The portfolio assesses knowledge, judgement and practical skills. The FICM document also assesses personal characteristics such as initiative, manner, organisational ability, communication skills and time keeping. Given the intense demands from both educational and clinical perspectives, trainee ACCPs need to have a well-structured teaching programme and adequate time for clinical skills, training, teaching and study days.

In summary, this new advanced practice role offers opportunities to improve continuity of patient care, enhance mentoring and training for less experienced staff, support gaps in the medical workforce as well as offering a rewarding clinical role for senior non-medical staff.

At our institution, we were able to demonstrate successful implementation and integration of the ACCPs in our critical care unit. The implementation of the ACCP trainee programme is labour intensive and requires significant input from clinicians and academics and not inexpensive however provided a satisfying and long-term sustainable workforce model for the critical care unit. The success of the ACCP implementation is due to a strong partnership between the hospital and the university but also buy-in from key stakeholders.

References:

1. Lee G, Pickstone N, Facultad J, et al. The future of community nursing- Hospital in the Home. *Br J Comm Nurs* 2017; 22 (4): 650-654.
2. Lee G and Titchener K. The Guy's and St Thomas's NHS Foundation Trust @home service: an overview of a new service. *London J Prim Care* 2017; 9(2): 18-22
3. Naughton C, Hayes N, Zahran Z, et al. The development of the Older Person's Nurse Fellowship: education concept to delivery. *Nurs Educ Today* 2016; 44: 1-7.
4. Lee G, Chou K, Jennings N, et al. The accuracy of adult limb radiograph interpretation by emergency nurse practitioners: A prospective comparative study. *Int J Nurs Stud* 2014; 51(4): 549-554.
5. Jennings N, O'Reilly G, Lee G, et al. Implementing the Emergency Nurse Practitioner into a major inner city trauma centre. A new model of care delivery for patients in the ED setting. *J Clin Nurs* 2008; 17: 1044- 1050
6. Keane A, Richmond T, et al. Critical care nurse practitioners: Evolution of the advanced practice nursing role. *Am J Crit Care* 1994: 3 (3): 232-237
7. Faculty of Intensive Care Medicine. *Advanced Critical Care Practitioners*. https://ficm.ac.uk/training-examinations/accps. (2017, accessed 10 Sept 2017)
8. Department of Health and Skills for Health. The national education and competence framework for advanced critical care practitioners. http://webarchive.nationalarchives.gov.uk/20100604111239/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_084011 (2008, accessed 10 Sept 2017).
9. Scottish Executive. Advanced Practice Toolkit http://www.advancedpractice.scot.nhs.uk/media/1371/supporting%20the%20development%20of%20advanced%20nursing%20practice.pdf (2008, accessed 10 Sept 2017).
10. Skills for Health. Employability Skills Matrix for the Health Sector. *http://www.skillsforhealth.org.uk/index.php?option=com_mtree&task=att_download&link_id=162&cf_id=24* (2007, accessed 10 Sept 2017).

11. Nursing and Midwifery Council. Standards for competence for registered nurses. https://www.nmc.org.uk/globalassets/sitedocuments/standards/nmc-standards-for-competence-for-registered-nurses.pdf (2015, accessed 10 Sept 2017).

12. Health Education England. Advanced clinical practice definition. https://hee.nhs.uk/our-work/developing-our-workforce/advanced-clinical-practice/advanced-clinical-practice-definition (2017, accessed 10 Sept 2017).

13. General Medical Council. Good Medical Practice. GMC. http://www.gmc-uk.org/guidance/good_medical_practice.asp (2013, accessed 10 Sept 2017).

14. D'Agostino R and Halpern NA. Acute Care Nurse Practitioners in Oncologic Critical Care: The Memorial Sloan-Kettering Cancer Center Experience. *Crit Care Clinics* 2010; 207-217

15. Landsperger JS, Semler MW, Wang L, et al. Outcomes of Nurse Practitioner-Delivered Critical Care: A Prospective Cohort Study. *Chest* 2016 149 (5): 1146-1154.

16. Costa DK, Wallace DJ, Barnato AE et al. Nurse Practitioner/Physician Assistant Staffing and Critical Care Mortality. *Chest* 2014; 146 (6): 1566-1573.

17. Lilly CM and Katz AW. The Effective Inclusion of Critical Care Advanced Practice Providers. *Chest* 2016; 149 (5): 1119-1120.